We Claim:

1. An optical switch comprising:

a controllable switch, and

a controlling means,

wherein said controllable switch is optically coupled to a first optical path and optically coupled to a termination of a second optical path, said controllable switch controlled by the controlling means to enable and disable optical coupling between the termination of the second optical path and the first optical path.

2. The optical switch of claim 1 wherein the controlling means receives as input, traffic information of said first optical path, for use in controlling the controllable switch.

3. The optical switch of claim 1 wherein the controlling means controls the controllable switch using a software state variable which is externally modifiable.

4. The optical switch of claim 1 wherein the controlling means receives as input, traffic information of said first optical path, the controlling means controlling the controllable switch using said traffic information, and using a software state variable which is externally modifiable.

5. The optical switch of claim 1 wherein the controlling means comprises a traffic detection means, a software state variable which is externally modifiable, a logic means and a controller, the controlling means receiving as input, traffic information of said first

optical path, the controlling means using said traffic information, and the software state variable to control the controllable switch.

6. The optical switch of claim 1 wherein the controllable switch is optically coupled to the first optical path by high optical power compatible connecting means.

7. The optical switch of claim 6 wherein the high optical power compatible connecting means are physical splices.

8. The optical switch of claim 1 wherein the controllable switch enables said optical coupling of the termination of the second optical path to the first optical path by causing substantially complete transmission of optical signals of the second optical path to the first optical path, and disables said optical coupling of the termination of the second optical path to the fist optical path by causing substantially complete attenuation of optical signals of the second optical path to the first optical path.

9. The optical switch of claim 1 wherein the controllable switch further comprises:

a wavelength selective filter,

a controllable optical signal blocker,

a third optical path,

wherein the controllable optical signal blocker is optically coupled to said termination of the second optical path and is controlled by said controlling means to allow and block

signals from the second optical path to the third optical path, the third optical path optically coupled to the controllable optical signal blocker and a second input of the wavelength selective filter, the wavelength selective filter optically coupled to the first optical path by a first input and a single output.

10. The optical switch of claim 9 wherein the controllable optical signal blocker operates to allow signals from the second optical path to the third optical path by causing substantially complete transmission of optical signals of the second optical path to the third optical path, and operates to block signals from the second optical path to the third optical path by causing substantially complete attenuation of optical signals of the second optical path to the third optical path.

11. The optical switch of claim 9 wherein the controllable optical signal blocker is an optical shutter.

12. The optical switch of claim 9 wherein the controllable optical signal blocker is a variable optical attenuator.

13. The optical switch of claim 1 wherein the second optical path is optically coupled to optical test equipment.

14. The optical switch of claim 13 wherein the optical test equipment is an Optical Time Domain Reflectometer.

15. The optical switch of claim 12 wherein the second optical path is optically coupled to an Optical Time Domain Reflectometer, and wherein the wavelength selective filter is substantially transmissive along the first optical path between the first input and the second output of the

wavelength selective filter to optical signals in a set of bandwidths corresponding to wavelengths of the carrier signals of the data throughput, the wavelength selective filter routing optical signals of wavelengths corresponding to a pulse from the Optical Time Domain Reflectometer between the second input of the wavelength selective filter and one of: the second input of the wavelength selective filter; and the single output of the wavelength selective filter.

16. The optical switch of claim 2 wherein the controlling means has a first mode of operation wherein the controlling means:

enables optical coupling between the termination of the second optical path and the first optical path when said traffic information indicates there is no data traffic on the first optical path; and

disables optical coupling between the termination of the second optical path and the first optical path when said traffic information indicates there is data traffic on the first optical path,

whereby data signals of the first optical path are controllably protected from signals from the second optical path.

17. The optical data protection switch of claim 16 wherein the controlling means has a second mode of operation wherein the controlling means controls the controllable switch using a software state variable which is externally modifiable.

18. The optical switch of claim 17 wherein the controlling means comprises a traffic detection means, a software state variable which is externally modifiable, a logic means and a controller, the controlling means receiving as input, traffic information of said first optical path, the controlling means using said traffic information, and the software state variable to control the controllable switch.

19. The optical switch of claim 16 wherein the controllable switch is optically coupled to the first optical path by high optical power compatible connecting means.

20. The optical switch of claim 19 wherein the high optical power compatible connecting means are physical splices.

21. The optical switch of claim 16 wherein the controllable switch enables said optical coupling of the termination of the second optical path to the first optical path by causing substantially complete transmission of optical signals of the second optical path to the first optical path, and disables said optical coupling of the termination of the second optical path to the fist optical path by causing substantially complete attenuation of optical signals of the second optical path to the first optical path.

22. The optical switch of claim 16 wherein the controllable switch further comprises:

a wavelength selective filter,

a controllable optical signal blocker,

a third optical path,

wherein the controllable optical signal blocker is optically coupled to said termination of the second optical path and is controlled by said controlling means to allow and block signals from the second optical path to the third optical path, the third optical path optically coupled to the controllable optical signal blocker and a second input of the wavelength selective filter, and the wavelength selective filter optically coupled to the first optical path by a first input and a single output.

23. The optical switch of claim 22 wherein the controllable optical signal blocker operates to allow signals from the second optical path to the third optical path by causing substantially complete transmission of optical signals of the second optical path to the third optical path, and operates to block signals from the second optical path to the third optical path by causing substantially complete attenuation of optical signals of the second optical path to the third optical path.

24. The optical switch of claim 22 wherein the controllable optical signal blocker is an optical shutter.

25. The optical switch of claim 22 wherein the controllable optical signal blocker is a variable optical attenuator.

26. The optical switch of claim 16 wherein the second optical path is optically coupled to optical test equipment.

27. The optical switch of claim 26 wherein the optical test equipment is an Optical Time Domain Reflectometer.

28. The optical switch of claim 25 wherein the second optical path is optically coupled to an Optical Time Domain Reflectometer, and wherein the wavelength selective filter is substantially transmissive along the first optical path between the first input and the second output of the wavelength selective filter to optical signals in a set of bandwidths corresponding to the wavelengths of the carrier signals of the data throughput, the wavelength selective filter routing optical signals of wavelengths corresponding to a pulse from an Optical Time Domain Reflectometer between the second input of the wavelength selective filter and one of: the second input of the wavelength selective filter; and the single output of the wavelength selective filter.